

# Exciting Force Affected by Heat

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901. OK the view that chemical force is the origin of the electric current in the voltaic circuit, it is important that we have the power of causing by ordinary chemical means, a variation of that force within certain limits,, without involving any alteration of the metallic or even the other contacts in the circuit. Such variations should produce corresponding voltaic effects, and it appeared not improbable that these differences alone might be made effective enough to produce currents without any metallic contact at all.

902. 33e la Rive has shown that the increased action of a pair of metals, when put into hot fluid instead of cold, is in a great measure due to the exaltation of the chemical affinity on that metal which was acted upon.<sup>2</sup> My object was to add to the argument by using but one metal and one fluid, so that the fluid might be alike at both contacts, but to exalt the chemical force at one only of the contacts by the action of heat. If such difference produced a current with circles which either did not generate a thermo current themselves,, or could not conduct "that of an antimony and bismuth element, it seemed probable that the effect would prove to be a result of pure chemical force, contact doing nothing.

903. The apparatus used was a glass tube (fig. 70), about five inches long and 0.4 of an inch internal

diameter., open at both

<sup>1</sup> Seventeenth Series, original edition, vol. ii. p.

5.9\*

<sup>2</sup> *Annales de Chimie*, 1828, xxxvii. p. 242.